

CAI

DA 20

-Z010

RARY MATERIAL

Government
Publications

CANADA DEPARTMENT OF AGRICULTURE

Practical farm
rehabilitation admin.

General publications



56-103

PFRA

TREE NURSERIES

REVISED

HISTORY

The history of tree-planting on the prairies goes back to well before the turn of the century, but it was not until 1901 that an organized program was established to encourage farmers to plant trees. At that time, the Tree Planting Division of the Forestry Branch of the Department of the Interior was granted 15 acres of land at the Indian Head Experimental Farm for the purpose of raising tree seedlings for distribution to farmers. Prior requests for trees had been filled by the Experimental Farms Service with seedlings from its farms at Indian Head, Brandon, Ottawa and elsewhere.

At first, farmers were reluctant to agree to a comprehensive plan that required them to plant trees in sizeable numbers. In 1900, a year before the first distribution, the Forestry Branch experienced much difficulty in persuading even 44 settlers to accept trees for planting on their farms under the terms for woodlot and shelterbelt development. The farmers objected because it meant setting aside sizeable pieces of summerfallowed land for tree plantings; furthermore, they lacked knowledge in tree-growing. However, the government plan gained acceptance once field servicemen instructed the farmers and provided information on varieties, soil preparation and maintenance.

Tree-growing on a considerable scale soon proved practical and demand grew rapidly. This led to establishment of the Forest Nursery Station at Indian Head, in 1903, separate from the Experimental Farm. Its function was to produce and distribute shelterbelt trees for what is now the three prairie provinces. Originally this station covered 160 acres, and in 1903 supplied 920,000 trees to 616 farms. Because of the heavy demand for seedlings, the acreage was increased to 320 acres in 1906 when 1,127 orders were processed, and over 2,000,000 trees distributed. In 1910 another increase in acreage was required as orders rose to 3,600

(Concluded on inside back cover)



Aerial view, PFRA Tree Nursery, Indian Head, Sask.

PFRA TREE NURSERIES

Two man-made beauty spots in Saskatchewan are the Tree Nurseries operated by the Canada Department of Agriculture at Indian Head and Sutherland. Formerly called Forest Nursery Stations, their prime purpose is to provide tree seedlings for farmers' use. Many trees are also used in soil and water conservation projects by Federal and Provincial government departments, as well as for the beautification of regional parks, school and hospital grounds.

Each year millions of deciduous trees and shrubs are distributed free, except for express charges, to Manitoba, Alberta and Saskatchewan points for use mainly as shelterbelts for farm homes and fields. Over 300 million seedlings have been distributed from the two Tree Nurseries since the program began over 60 years ago. Many thousands of coniferous tree seedlings are also produced and distributed at a nominal charge primarily for farm homestead shelter-



Aerial view, PFRA Tree Nursery, Sutherland, Sask.

belts. In addition to providing information on shelterbelt planning, the Nurseries play a major role in establishing and promoting tree culture programs on the prairies. The Nurseries also serve as question-and-answer centers for farmers who annually enquire about tree diseases, insects, herbicides and other matters concerning the care of trees.

Tree belts on farms provide shelter and impede wind erosion. They also trap the winter's snow, thus providing water in the spring to help fill dugouts used for irrigating gardens, domestic, stockwatering and other farm uses. Trees on watersheds, too, have been found to prevent erosion from runoff. Still another use for trees from the Tree Nurseries has been to establish roadside hedges to serve as 'living' snow fences in winter. And tree seedlings have also been used in reforestation and afforestation programs on submarginal lands.

Finally, trees have a very important aesthetic value in prairie areas. As early as 1901, the Superintendent of Forestry, in his annual report to the Department of the Interior wrote: "Trees will do more than can be done by any other known agency in transforming the bleak plains of the west from the uninviting aspect which they present in their natural state and tend to make the country more attractive" This concept of beautification has never changed.

Picking crabapples from tree protected
by field shelterbelt near Delisle, Sask.





Proper soil preparation necessary to start a field shelterbelt.



Field shelterbelt being planted near Hanley, Sask.



Dr. W. H. Cram, Superintendent, Indian Head Tree Nursery, discussing coniferous planting with J. E. Beamish of PFRA.



Coniferous tree seedlings, Indian Head.

PROGRAM

More than 330,000 orders for trees have been filled by the Nurseries since 1901. This figure, however, might have been greatly increased had it not been for drought, which can drastically reduce tree production. In 1961, it reduced germination to 10 per cent from the better than 80 per cent expected in a normal year.

With the Tree Nurseries now part of PFRA they will receive the full advantages of the water conservation programs of PFRA, enabling them to expand production. During the next few years, it is anticipated that distribution of up to 12,000,000 trees annually can be achieved. This number is estimated as the requirement for increased farmstead and field shelterbelt plantings, and the new demands for trees for wildlife and agro-recreational projects to be sponsored under the Agricultural Rehabilitation and Development Act (ARDA) program.

INVESTIGATION

Investigations to support the tree production and distribution program have been conducted at the Indian Head station since 1947. Investigational support has also been given by the Research Branch, Canada Department of Agriculture, and by the Forest Entomology and Plant Pathology Branch, Canada Department of Forestry. Studies have been required in the general categories of entomology, tree breeding, plant pathology, plant physiology and nursery practices. Although there is considerable information on these subjects as related to forests, additional information is necessary where prairie shelterbelts, nursery operations and tree seed production are concerned.

The entomological studies have been concentrated in the areas of seed, foliage, scale and borer insects, their characteristics and control for planted shelterbelts and shade trees, seed production plots and nursery production.

The tree improvement studies have been concerned with the production, propagation and evaluation of new hybrids or species of shrubs and trees suitable for prairie planting. By improving the strains, better results have been obtained in growth, drought or salinity tolerance, insect resistance and hardiness of trees. Taller hybrid *Caragana* for field shelterbelts, and Blue Spruce resistant to scale and spider insects, are two major projects of the breeding program.

Studies in plant pathology have resulted in the identification and control of several nursery diseases. These studies have been applied specifically to diseases of nurseries on alkaline soil where disease factors are grossly dissimilar from

those found in forests and native bush.

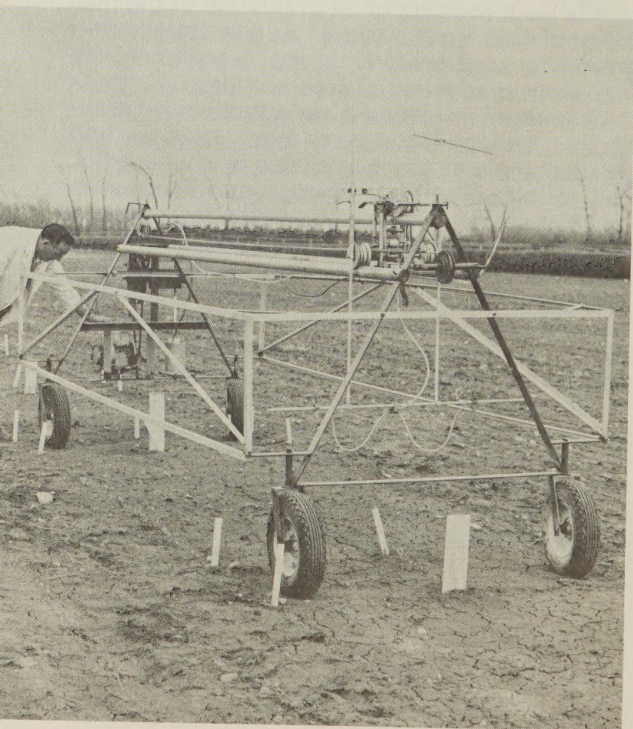
The plant physiology work done at the Indian Head station has provided some original and invaluable information on the effect on trees of herbicides used for weed control. Several chemicals are in common use to control both weeds and regrowth of bush, but in this case the aim was to find herbicidal compounds to completely irradiate weeds without causing any ill effects to germinating seeds, growing seedlings and established trees. Co-operative studies with the Research Branch are in progress to determine the phytotoxicity of all available herbicides to species of trees, to select the nontoxic herbicides and evaluate their efficiency for weed control in the nursery, shelterbelts and parks. Another phase of this work consists of an evaluation of the maturity of tree seeds, as well as the storage and presowing seed treatments necessary to ensure maximum production of tree seedlings.

Other studies involved investigations on propagation, storage for nursery stock, spacings and arrangements of species for use in shelterbelts. Soil salinity, fertility, drainage and other cultural aspects are also being investigated to determine their effect on the production, health and growth of trees, and methods to improve same.

Every effort is being made to mechanize nursery operations as a means of increasing production without a corresponding increase in labor. In the absence of commercial equipment it is necessary to modify existing farm equipment, or to design and construct special units, for the various nursery operations. At least fourteen units of nursery equipment have been modified or built since 1960, and other modifications and developments are in progress.



Appraising new grafts of pine selections.



Spraying machine made at Tree Nursery.



Collecting borers from trunk of ash tree.

Determining viability of tree seeds by germination.



TREE DISTRIBUTION

Both Nurseries provide a variety of deciduous tree seedlings such as Caragana, Ash, American and Siberian Elms, Maple, Poplar and Willow. These seedlings are distributed without charge, providing a farmer agrees to the planting and care specifications. Coniferous trees such as Colorado Spruce, Junipers, White Spruce and Scots Pine are grown only at Indian Head for distribution to the farmers.

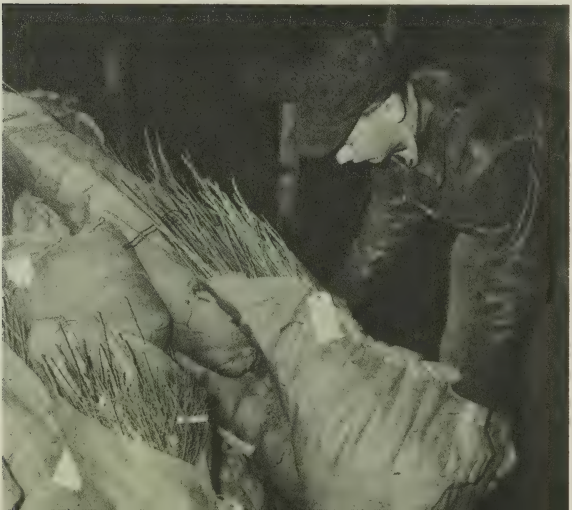
All administration associated with the distribution of trees from both the Indian Head and Sutherland nurseries is centered at Indian Head, Sask. Applications should be forwarded as individual submissions from each farmer, and must reach the Tree Nursery at Indian Head by February 28 of each year for trees required the following spring.

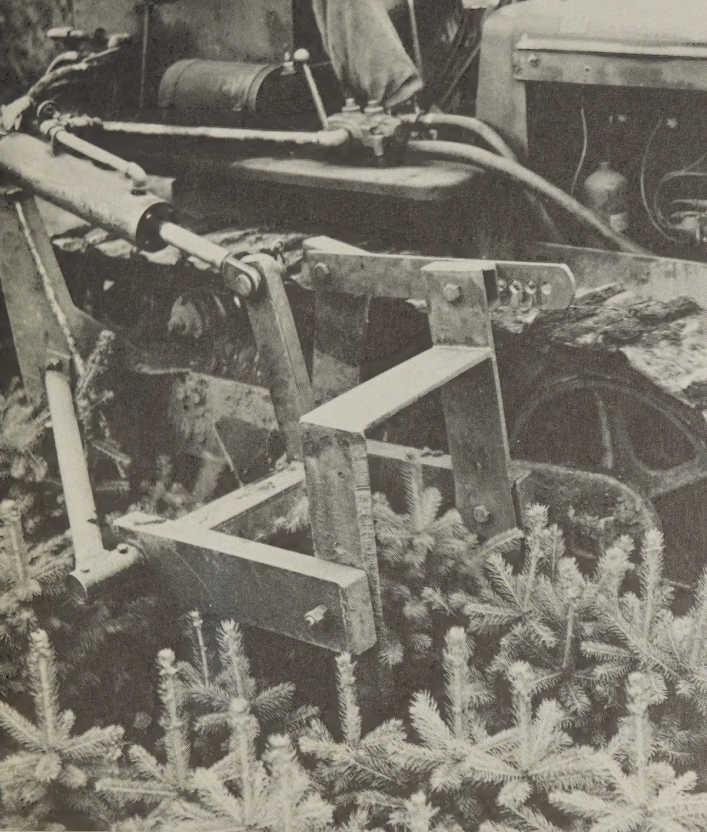
Application forms and further information may be obtained from:

- (a) PFRA Tree Nursery, Indian Head.
- (b) PFRA Water Development offices.
- (c) Provincial Agricultural Representative and District Agriculturalist offices.

The tree landscapes of the nurseries are a recreational attraction to the public. Thousands of people visit the Tree Nurseries during the summer months and show considerable interest in the various species and demonstration plots.

Deciduous tree seedlings ready for shipment.





Special machine lifts conifer seedlings which are distributed for shelterbelt planting.

As many as 8 million seedlings have been shipped from the Nurseries in one year.



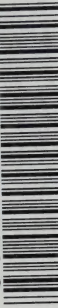


**Field shelterbelts north of Conquest, Sask.
PFRA Tree Nursery headquarters, Indian Head.**



VF

3 1761 11553381 2



ROGER DUHAMEL, F.R.S.C.
Queen's Printer and Controller of Stationery
Ottawa, 1965

Cat. No. A22-5465

5M-32597-7-65

Prepared by Information Division,
Canada Department of Agriculture